IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : Pierre Gautier et al.

SERIAL NO. : 09/806,091   EXAMINER : Behrooz M. Senfi

FILED : March 26, 2001   ART UNIT : 2613

FOR : METHOD AND DEVICE FOR ENCODING VIDEO SIGNAL

APPEAL BRIEF TRANSMITTAL LETTER

Mail Stop Appeal Brief-Patents
Commissioner for Patents
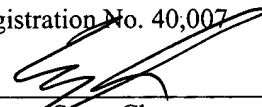P.O. Box 1450
Alexandria, VA. 22313-1450

Dear Sir:

Appellants respectfully submit three copies of an Appeal Brief For Appellants that includes an Appendix with the pending claims. The Appeal Brief is now due on June 8, 2005.

Appellants enclose a check in the amount of $500.00 covering the requisite Government Fee.

Should the Examiner deem that there are any issues which may be best resolved by telephone communication, kindly telephone Applicants undersigned representative at the number listed below.

Respectfully submitted,
Russell Gross
Registration No. 40,007

By: Steve Cha
Attorney for Applicant
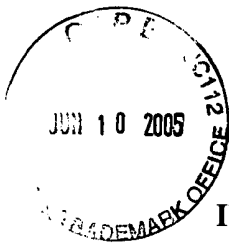Registration No. 44,069

Date: June 8, 2005

Mail all correspondence to:
Russell Gross, Registration No. 40,007
US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001
Phone: (914) 333-9608
Fax: (914) 332-0615

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

In re the Application
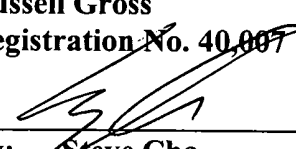
Inventor	:	Pierre Gautier et al.
Application No.	:	09/806,091
Filed	:	March 26, 2001
For	:	METHOD AND DEVICE FOR ENCODING VIDEO SIGNAL

APPEAL BRIEF

On Appeal from Group Art Unit 2613

Russell Gross
Registration No. 40,007

By: Steve Cha
Attorney for Applicant
Registration No. 44,069

Date: June 8, 2005

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TABLE OF CASES

I.   REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, U.S. Philips Corporation, and not the party named in the above caption.
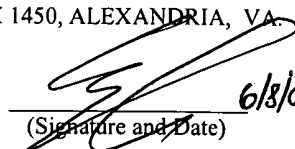
II.   RELATED APPEALS AND INTERFERENCES

With regard to identifying by number and filing date all other appeals or interferences known to Appellant which will directly effect or be directly affected by or have a bearing on the Board's decision in this appeal, Appellant is not aware of any such appeals or interferences.

III.   STATUS OF CLAIMS

Claims 1-7 have been presented for examination. Claims 1-7 are pending, claims 1 and 3-6 stand finally rejected, claims 2 and 7 depend from a rejected base claim but would be allowed if rewritten in independent form. Claims 1-7 form the subject matter of the present appeal.

IV.   STATUS OF AMENDMENTS

In response to the patent application filed March 26, 2001, containing claims 1- 4, and assigned US Patent Application Serial No. 09/806,091, a first Office Action was mailed on May 20, 2004. Claims 1, 3 and 4 were rejected under 35 USC §103(a) as being unpatentable over Casavant (USP no. 5,491,516). Claim 2 was objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form.

On August 11, 2004, a response to the first Office Action was timely filed which presented arguments why the reference cited failed to render obvious the claimed invention. Amendments were made to the claims to more clearly state the invention and to correct errors in form. Independent claim 5 and dependent claims 6 and 7 were added, which recite a system for executing the method recited in claim 1. No new matter was added.

On January 11, 2005, a second and Final Office Action was entered, which rejected claims 1 and 3-6 as being obvious over Casavant for the same reason as stated in the previous Office Action. Claims 2 and 7 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form. On February 24, 2005 a response to the second and Final Office action was filed that presented additional arguments as to why the claimed invention was not anticipated by the recited reference. A minor amendment was made to claim 4 to correct a typographical error.

An Advisory Action was mailed on March 24, 2005, which maintained the reason, and provided further explanation, for rejecting the claims. The Advisory Action stated that the amendments made to the claims were entered for the purposes of an appeal.

A Notice of Appeal, with appropriate fee, was filed on April 8, 2005. This Appeal Brief is being filed within two (2) months after the filing of the Notice of Appeal.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention describes a method for pre-processing successive frames in a video stream composed of a plurality of frames and each frame is represented by a pair of fields (F1, F2). (see Figure 1 of the instant application). As described in the instant application, video material has no field dominance, however, such dominance is relevant when frame boundaries must be maintained. A frame is considered F1 dominant if it is constituted by a first field F1 followed by a second field F2 and is F2 dominant if it is constituted by second field F2 followed by field F1. (see page 1, lines 14-18). The present invention provides for pre-processing the video stream by delaying the frames by at least two fields and adjusting the delay by suppressing a F2 field when a determination is made that sequential frames have changed from an F1 dominance to an F2 dominance and repeating a field when a determination is made that sequential frames have changed from F2 dominance to F1 dominance. (see page 2, lines 9-17). An example of the operation is shown with regard to Figure 7, wherein, at time t12, a determination is made that a change from F1 dominance to F2 dominance has occurred in the sequence of frames and, hence, the F2 field in Frame 4 is suppressed. Similarly, at time t21, a determination is made that a change from F2 dominance to F1 dominance has occurred in the sequence of frames and the F1 field in frame 6 is repeated. (see page 2, line 25-page 6, line 7).

VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

The issue in the present matter is whether:

1. Claims 1-7 are unpatentable under 35 USC §103(a) over Casavant *et al.*

VII.   ARGUMENT

I. Rejection of Claims 1-7 under 35 USC §103(a)

Difference Between the Claimed Invention
and the Cited Reference

The present invention describes a method for pre-processing a video signal composed of a sequence of frames prior to encoding the video signal, wherein the pre-processing maintains a order of field data within the frame sequence, by determining whether the field data is F1 or F2 dominant and suppressing a field when a change from F2 to F1 dominance is determined and injecting a field when a change from F1 to F2 dominance is determined.

Casavant teaches an apparatus for field elimination for video compression/decompression. The system, at an encoder, includes a memory for storing two fields of image data and providing fields of image data separated by one frame interval. Image data from corresponding fields of successive frames are subtracted to generate field differences. The differences are accumulated and if the accumulated difference is less than a predetermined value the most recent field is removed or excised from the transmission stream. The removed field may then cause a disruption in the order of the fields within each frame. In one case, when no fields are removed, the frame transmitted may be in the order of a, nominal, first/second (odd/even) fields. In a second case, when a field is considered redundant and dropped, the frame transmitted may be of the order second/first field. Casavant further teaches the use of a DF bit that is set to one when the odd and even fields are reverse in time order (see col. 6, lines 4-6). When the

even and odd fields are in normal order than the DF flag is set to a logical zero value (see col. 6, lines 14-16). When the fields are reversed, the DF field is set to a second value. The DF flag is provided to a receiving unit, which enables the receiving unit to determine the field order and reconstruct the video signal. The decoder provides the nominally odd/even frame directly to an output device as no redundancy is indicated ("When no field redundancy is indicated, data is coupled directly from the memory to the output device." (see col. 6, lines 65-67)). However, when the DF flag indicates an even/odd field order, then the decoder uses information stored from a previous frame to display the information in the proper field sequence, (see col. 7, lines 14-19).

Hence, Casavant teaches an encoder for removing or excising fields from the data stream when the data is considered redundant and providing an indicator to enable a receiver (decoder) to reconstruct the original signal. However, Casvant fails to disclose suppressing a field, (decreasing a delay) when a change from F1 dominance to an F2 dominance is detected, or injecting a field (increasing a delay) when a change from F2 dominance to an F1 dominance is detected at the encoder.

No Motivation Exists for the
Examiner's Proposed Modification

The law is clear that there must be some teaching in the references to support their use in the particular claimed combination. See *Smithkline Diagnostics, Inc., v. Helena Labs Corp.*, 859 F.2d 878, 887, 8 USPQ 2d 1468, 1475 (Fed. Cir. (1988).

The Advisory Action states that "the decreasing of the delay or increasing a delay would be affected by removing (suppressed) or repeating a field and not by

detecting F1 dominance to F2 dominance ... Therefore, the cited reference ... meets the limitation as claimed." However, applicant submits that even if it could be said that removal of fields is comparable to decreasing the delay and adding fields is comparable to increasing the delay, Casavant certainly fails to teach, disclose or suggest suppressing or injecting fields based on a determination of a change of field dominance from F1 to F2 or F2 to F1 as is claimed. Rather, Casavant only teaches removal of fields from the bit stream during the encoding phase when redundancy in field data is determined and provides the receiver with an indication that a field has been removed. The receiving unit may then, based on the condition of the indicator, inject a field in the stream to recover the excised field.

Applicant submits, that in this case, no reason has been shown, either explicitly or implicitly, in the Casavant reference that would render the invention obvious. Rather the Office Action merely states that "it would have been obvious ... that removal/elimination of redundant fields would decrease the delay and repeating the fields would increase the delay equal to the amount removed/added." However, nowhere in the Casavant reference does the transmitter or encoder teach or suggest repeating or add fields based on a determination of field dominance, as is recited in the claims.

With regard to obviousness the courts have found "[t]he very ease with which the invention can be understood may prompt one to fall victim to the ... effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher." *Iron Grip Barbell Company v. USA Sports, Inc.*, Docket no. 04-1149, Dec. 14, 2004, p. 4, (Fed.Cir. 2004), (quoting *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000). "Where an invention is contended to be obvious ... our cases require that there be a

suggestion, motivation or teaching ... for such a combination." *Id.* at 5 (quoting *In re Fine*, at 1074 (Fed. Cir. 1988). "This requirement prevents the use of 'the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentablility -- the essence of hindsight.'" *Id.* (quoting *Ecolochem, Inc. v. So. Cal. Edison Co.*, 227 F.3d 1361, 1371-1372 (Fed. Cir. 2000), quoting *In re Dembiczak*, 175 F. 3d 994, 999 (Fed. Cir.1999)).

Applicant believes that the teachings of the instant application have been impermissibly used as a blueprint to modify Casavant without any suggestion or reason for such modification. Casavant teaches a method of removing fields from the transmission signal and the receiving unit able to inject the removed fields into the received signal. Casavant fails to teach an encoder that removes or injects fields based on a determined field dominance, as is recited in the claims.

In view of the above, applicant submits that the independent claims 1 and 5 are patentable over the teachings of the cited reference.

With regard to the remaining claims, these claims dependent from the independent claims and accordingly, are also not rendered obvious by Casavant by virtue of their dependency upon an allowable base claims.

The Proposed Modification of Casavant Fails to Arrive at the Present Invention

To establish a prima facie case of obviousness of a claimed invention, all the claim limitations must be taught or suggested in the prior art. See *In re Royka,* 490 F. 2d 981, 180 USPQ 580 (CCPA 1975). The proposed modification of Casavant fails to establish a prima facie case of obviousness because, even if there were some motivation

to develop the feature suggested by the examiner, all of the claim elements are not taught or suggested by the combination of the teachings of the cited reference and the inference that adding fields increases the delay. Rather, the proposed modification fails to generate suppression or injection of fields based on a determination of a change of field dominance, as is recited in the independent claims, as Casavant is silent with regard to this claim element.

Accordingly, Casavant cannot be said to render obvious the invention recited in the independent claims, as Casavant fails to recite an element recited in the independent claims

In view of the above, applicant submits that the independent claims 1 and 5 are patentable over the teachings of the cited reference.

With regard to the remaining claims, these claims dependent from the independent claims and accordingly, are also not rendered obvious by Casavant by virtue of their dependency upon an allowable base claims.

The Proposed Modification
Renders the Casavant Unsatisfactory for its Intended Purpose

"If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification" MPEP 2143.01 p. 2100-131, Rev. 2, May 2004 (quoting *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

As shown, Casavant teaches a method of suppressing fields when a redundancy is determined. Hence, repeating fields in the bit stream, as suggested, would be an element that is contrary to the teachings of Casavant.

Hence, if the teachings of Casavant can be modified as suggested, the modified device would impose additional delay in the bitstream and, hence, would expand and not compress the video stream. Such expansion of the video stream would be contrary to the teachings of Casavant.

For at least the above reasons, the prior art reference cited fails to render obvious the present invention, as recited in the independent claims.

With regard to the remaining claims, these claims dependent from the independent claims and, accordingly, are also not rendered obvious by the prior art references cited by virtue of their dependency upon an allowable base claims.

In view of the above, applicant submits that all of the claims are patentable over the teachings of Casavant.

VIII.   CONCLUSION

In view of the law and facts stated herein, it is respectfully submitted that the teachings of the primary reference, Casavant, fails to render obvious the claimed invention and the burden of showing that Casavant teaches or suggests all of the features, expressly or inherently, recited in the claims has not been met. Applicant respectfully requests this honorable board reverse the rejection of the claims.

Respectfully submitted,
Russell Gross
Registration No. 40,007

Date: June 8, 2005

By: Steve Cha
Attorney for Applicant
Registration No. 44,069

CLAIMS APPENDIX

The claims which are the subject of this appeal are as follows:

1.   A method for encoding video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, in which the encoding step is preceded by a preprocessing step which itself comprises the sub-steps of :

(A)   receiving the successive frames and delaying each of them with a delay of at least two fields;

(B)   adjusting said delay according to the following dominance change criterion:

          (a)   when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration;

          (b)   when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.

2.   The method according to claim 1, said sequence of frames being constituted either by film-type images, to which a 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, said method comprising the steps of :

(A)   detecting that the current sequence is constituted by film-type images

(B)   encoding said current sequence, either after said preprocessing step when it is not detected as being of film-type or after implementation, on said current sequence, of the inverse 3:2 pull-down technique if it is detected as being of film-type;
and said detecting step comprising the sub-steps of:

          (a)   defining for two successive fields $F(n)$ and $F(n+2)$ of the same parity a number of pixels N2 such as N2 = NTOT - N'2, where NTOT is the number of pixels in a field, N'2 is the number of pixels for which ABS (val $F(n)$ - val $F(n+2)$) < TH2, ABS designates the function "absolute value", val designates the luminance of a pixel, and TH2 is a first predefined threshold;

(b)   comparing the result of the subtraction of two consecutive numbers N2, divided by NTOT, to a second predefined threshold THR;

(C)   detecting that the current sequence is constituted by film-type images only when said result is lower than said second threshold, said fields being then considered as equal.

3.   A device for encoding video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, said sequence being constituted either by film-type images, to which a 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, said device comprising :

(A)   means for detecting in the input sequence of frames a sequence of film-type images;

(B)   means for receiving the successive frames of the input sequence, delaying each of them with a delay of at least two fields, and adjusting said delay according to the following dominance charge criterion:

(a)   when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration ;

(b)   when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.

(c)   means for encoding the input sequence of frames, either connected in series with means (B) when said sequence is not detected as being of film-type or after implementation of the inverse 3:2 pull-down technique if it is detected as being of film-type.

4.   The device according to claim 3, in which said detecting means comprise a set of subtractors, provided for receiving each one two successive fields of the same parity and determining per pixel the difference between these fields and followed by a set of circuits provided for taking the absolute value of said difference and storing it,

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computing in subtractors the successive differences between the successive values of these stored absolute values, comparing these differences to a predefined threshold, and detecting a sequence of film-type only when said difference is lower than a predefined threshold, said fields being then considered as equal.

5.   A system for pre-processing video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, prior to encoding, said system comprising:

a processor in communication with a memory, said processor executing code for:

(A)   receiving said successive frames and delaying each of them with a delay of at least two fields;

(B)   adjusting said delay according to the following dominance change criterion:

(a)   when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration;

(b)   when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.

6.   The system according to claim 5, wherein said sequence of frames being constituted either by film-type images, to which a_ 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, wherein the processor further executing code for:

(A) detecting that the current sequence is constituted by film-type images;

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(B) encoding said current sequence, either after said preprocessing step when it is not detected as being of film-type or after implementation, on said current sequence, of the inverse 3:2 pull-down technique if it is detected as being of film-type; and

(C) detecting that the current sequence is constituted by film-type images only when said result is lower than said second threshold, said fields being then considered as equal.

7.   The system according to claim 6, wherein the code for detecting in step (A) further comprises code for:

(a)   defining for two successive fields $F(n)$ and $F(n+2)$ of the same parity a number of pixels N2 such as $N2 = NTOT - N'2$, where NTOT is the number of pixels in a field, $N'2$ is the number of pixels for which ABS (val $F(n)$ - val $F(n+2)$) $<$ TH2, ABS designates the function "absolute value", val designates the luminance of a pixel, and TH2 is a first predefined threshold; and

(b)   comparing the result of the subtraction of two consecutive numbers N2, divided by NTOT, to a second predefined threshold THR.